range: 2–40 pulses) changes of intraatrial conduction properties via PI in 18 out of 20 patients (bidirectional block: n = 14, unidirectional block: n = 3, conduction delay: n = 1, unchanged conduction: n = 2). Following ablation Aflut was rendered non-inducible in all pts. 18 out of 20 pts (90%) remained free of Aflut during a follow-up of 9 (2–15) months. Two out of six pts. without a bidirectional conduction block had a recurrence. One of these two pts. underwent successful repeat ablation. In the other patient Aflut converted into chronic atrial fibrillation.

Conclusions: RFC ablation of Aflut, guided by the induction of an intraatrial conduction block can be effectively performed with a simplified strategy using a single transfemoral electrode catheter for mapping of the posterior tricuspid isthmus including CS and right atrial free wall. This approach has a high accuracy with respect to the detection of RFC-induced changes of intraatrial conduction patterns.

11:15

807-4 Studies on Atrial Fibrillation in Humans: Atrial Mapping and Attempts at Catheter Ablation

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Background: Systematic mapping in both the right and left atrium of patients with atrial fibrillation (AF) has not yet been undertaken. Radiofrequency catheter ablation (RF) techniques are under evaluation for elimination of AF but their efficacy and safety are unknown.

Methods: Nine patients (pts) with permanent AF and 5 pts with paroxysmal AF, aged 59 ± 8 years, with no structural heart disease were studied. Following the recording of atrial electrograms, linear RF lesions were created in preselected areas in the left and right atrium and the coronary sinus.

Results: All patients displayed two areas of consistently organized electrical activity during fibrillation; one on high lateral wall, and one on right appendage. Mean procedure and fluoroscopy times were 176.9 ± 44.3 and 46.8 ± 12.4 min respectively. Four patients, one with chronic and 3 with paroxysmal AF, were converted into sinus rhythm (SR) during RF current applications, whereas in 2 patients conversion of AF has been impossible even with DC cardioversion. At 14 ± 5 months follow-up, 2 out of 9 patients with permanent AF of duration less than 6 months remain in SR, whereas in the rest of the patients AF has recurred. In all but one patient with paroxysmal AF the symptoms had disappeared and no AF was registered on Holter.

Conclusions: Regardless of the type or duration of AF, certain areas in the atria maintain well organized electrical activity. RF ablation may result in restoration and maintenance of SR in patients with paroxysmal and even permanent AF of duration less than 6 months. The procedure appears to be safe and well tolerated.

11:30

807-5 New Techniques to Create and Verify Continuity of Long RF Lesions in Patients With Atrial Fibrillation

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Precise localisation of the catheter (C) tip is crucial to generate a continuous radiofrequency (RF) lesion (L), particularly if a standard ablation *(A)* C with single tip is used. RF delivery is currently guided by fluoroscopy, using multi-plane views of atria for the A of atrial fibrillation (AF). We report the feasibility of creating and verifying long and continuous atrial Ls in patients with drug-refractory (DR) AF, by means of a real-time 3-dimensional (3D) non-fluoroscopic (NF) imaging system. We used 5 mm tip magnetically locatable Cs (NAVISTAR), and a NF mapping and navigation system (CARTO) in 13 patients (10 males, 3 females; mean age 45 ± 17 yrs) with DR AF. All procedures included: mapping 3D atrial geometry; obtaining atrial activation and propagation maps; planning the routes for *A* lines; delivering radiofrequency (RF) energy in a temperature-controlled mode; and monitoring the tip location on the 3D atrial map. Each *A* site was tagged on the 3 D map in order to trace the *A* lines and to mark the exact C position. Verification of *A* line completeness was obtained by evaluating: a) the contiguity of tags, and b) the modification of atrial activation and propagation map. A distance >5 mm between tags was considered as an *A* line gap (G). Gs were re-mapped and RF energy was reapplied if atrial activity could be recorded in those sites. The following Ls were created in the left atrium: from superior *(S)* lateral *(L)* pulmonary vein (PV) to *S* medial *(M)* PV; from *SM* PV to inferior *(I)* *M* PV; from *SL* PV to *IL* PV; from *IM* PV to mitral ring; from *IL* PV to mitral ring. L in the right atrium were: from S to *I* vena cava (VC); from *S* VC to the anterior tricuspid ring; from postero-septal aspect of the *I* VC to tricuspid isthmus. The cumulative length of left Ls was 142 ± 50 mm, and required 65 ± 17 RF pulses; while the length of Ls in the right atrium was 161 ± 66 mm, requiring 34 ± 7 RF pulses. Continuous lines and modification of the activation and propagation maps were obtained in 11 Pts (84.6%). One patient required permanent PM implantation. This initial experience shows that locatable Cs and 3D NF mapping system result in a reliable atrial geometry imaging, facilitating the creation and verification of continuous linear Ls in the atria.

11:45

807-6 Early Outcome of Patients With Paroxysmal Atrial Fibrillation After Primary Ablation Guided by Electroanatomical Mapping

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In 10 pts (61 ± 7 yrs; 8 males) with recurrent symptomatic drug-refractory paroxysmal atrial fibrillation (AF) present for 9.4 ± 6 yrs (episodes/month: 15 [4–30]), primary RF ablation was attempted guided by electroanatomical mapping (CARTO, Biosense). In all pts, a left atrial (LA) approach was performed first (session duration, 9.6 ± 1.6 h). After reconstruction of the LA, an ablation line of 191 ± 35 mm was created via point-by-point application of RF current (median no. of applications/pt: 54 [37–67]) to electrically insulate the pulmonary veins. Pericardial drainage was required in 1 pt after transseptal puncture, spontaneously resolving pericardial effusion was diagnosed by echocardiography in 5 pts in the week postablation. At day 7, 7 pts (70%) still had intermittent AF; in 2 pts with AF converting into common-type atrial flutter, overdrive pacing reestablished sinus rhythm. 1 pt had been in stable sinus rhythm. In 7 pts, right atrial (RA) ablation was performed 8 days after LA ablation using the same technique (session duration, 6.4 ± 1.8 h). A total of 130 ± 34 mm of ablation lines (isthmic, intercaval, and superior) was created (median no. of applications/pt: 45 [31–67]). 15 ± 11 days after RA ablation, 4 pts had intermittent AF with no significant clinical improvement, 1 pt had recurrent symptomatic nonsustained AF, and 2 were in stable sinus rhythm. One pt required pacemaker implantation secondary to procedure-related sinus node dysfunction.

Conclusions: RF compartmentalization of human atria is associated with a significant change in the electrophysiological substrate in 60% of pts. In addition, early pericardial inflammation after ablation may obscure the electrophysiological changes in the remaining pts. Longer follow-up is required to assess the clinical impact of this ablation technique.

808 Carotid and Subclavian Artery Stenting

Monday, March 30, 1998, 10:30 a.m.–Noon
Georgia World Congress Center, Lecture Hall 1

10:30

808-1 Late Outcome of Carotid Stenting in Restenotic Lesions Following Endarterectomy

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Repeat carotid endarterectomy for recurrent stenosis carries a significantly higher complication rate than the original operation. Between 9/94 and 6/97, 50 patients with restenotic lesions (60% to 99% diameter stenosis) following a prior surgical endarterectomy, underwent elective carotid stenting. The mean age was 69.4 ± 7.8 years, 31 (62%) were males and 36 (72%) had associated CAD. Bilateral carotid disease was present in 26 (52%) and contralateral occlusion in 10 (20%) patients. Of the 36 (72%) patients who had symptoms attributable to the vessel treated, only 7 were NASCET eligible. A total of 79 stents (43 balloon expandable and 36 self expanding) were deployed in 59 vessels during 58 procedures.

Results: The mean diameter stenosis was reduced from 76.3 ± 15% to 2.5 ± 6.4%. There was 1 (1.6%) technical failure due to extreme tortuosity of the proximal vessel resulting in inability to obtain guiding catheter access. One patient (1.6%) developed air embolism during baseline angiography. The procedural neurologic complications included 3 (4.9%) minor strokes and 1 (1.6%) major stroke. There were no procedural deaths. Follow up angiography / duplex ultrasound at six months performed in 30/40 (75%) eligible patients, revealed no restenosis. At late follow up (mean 10.2 ± 9.3 months) in 43 patients there were no neurologic complications. There were two late non neurologic deaths.

Conclusions: Carotid stenting can be successfully performed in restenotic vessels following endarterectomy with a low rate of neurologic complications. The angiographic / ultrasound restenosis and late event free survival is excellent.